

Notice of Allowability

Application No.

09/915,692

Examiner

Oanh Duong

Applicant(s)

NAKAGAWA ET AL.

Art Unit

2155

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 09/30/2005.
2. ☒ The allowed claim(s) is/are 1-6 and 9-27.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 10/25/2005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


SALEH NAJJAR

SUPERVISORY PATENT EXAMINER

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance:

None of prior art teaches or suggests accounting system and method that calculate the rate/charge defined as follows:

wherein for each said accounting subject control unit, accounting data is generated using metered accounting if an access-number-of time upper limit value for either the number of accesses per unit of time or for the quantity of data transferred per unit of time is not set, the metered accounting being based on a rate defined by:

$$\text{rate} = (\text{access number-of-time integrated value} \times \text{single-access rate}) + (\text{storage capacity} \times \text{capacity unit price}),$$

wherein for each said accounting subject control unit, if said access-number-of time upper limit value is set, then accounting data is generated using fixed accounting when said access-number-of time upper limit value has not been exceeded,

wherein for each said accounting subject control unit, if said access-number-of time upper limit value is set and an access limit for the number of accesses is not set, then accounting data is generated using metered accounting when said access-number-of time upper limit value has been exceeded, the metered accounting being based on a rate defined by:

$$\text{rate} = (\text{access number-of-time upper limit value} \times \text{single-access rate}) + ((\text{access number-of-time integrated value} - \text{access number-of-time upper limit value}) \times \text{single-access rate when the integrated value is larger than the upper limit value}) + (\text{storage capacity} \times \text{capacity unit price}),$$

wherein for each said accounting subject control unit, if said access number-of time upper limit value is set and said access limit is set, then accounting data is generated using fixed accounting.

Therefore, the invention is patentable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with George B. F. Yee (Registration No. 37,478) on 10/18/2005.

The application has been amended as follows:

Amendments to the Specification as follows:

Please replace the three paragraphs beginning on page 19, line 15 and ending on page 21, line 18 with the following amended paragraphs:

(1) Under the condition that no access number-of-time upper limit value is set for the WWN 105, the rate for the access number-of-time integrated value 615 which

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is the accounting data sent from the storage control device 401 will be calculated in a manner as follows.

$$\begin{aligned} \text{rate} = & (\text{access number-of-time integrated value [number of times/second]} \\ & \times \text{single-access rate } [[\text{¥}]\$/\text{number of times}]) + (\text{storage capacity [MByte]} \\ & \times \text{capacity unit price } [[\text{¥}]\$/\text{MByte}]) \end{aligned}$$

Thus, this rate is calculated on the basis of meter accounting of the number of times of the access. Further, if one access rate is set to 0 $[[\text{¥}]\$/\text{number of times}]$, the rate will be a fixed amount because only the storage capacity is accounted.

(2) Under the condition that there is an access number-of-time upper limit value for the WWN 105 but there is no limit in the access to the WWN 105, the rate for the access number-of-time integrated value 615 which is the accounting data sent from the storage control device 401 will be calculated in a manner as follows.

In the case where the access number-of-time upper limit value is equal to or greater than the access number-of-time integrated value:

$$\begin{aligned} \text{rate} = & (\text{access number-of-time upper limit value [number of times/second]} \\ & \times \text{single-access rate } [[\text{¥}]\$/\text{number of times}]) + (\text{storage capacity [MByte]} \\ & \times \text{capacity unit price } [[\text{¥}]\$/\text{MByte}]) \end{aligned}$$

In the case where the access number-of-time upper limit value is smaller than the access number-of-time integrated value:

$$\begin{aligned} \text{rate} = & (\text{access number-of-time upper limit value [number of times/second]} \\ & \times \text{single-access rate } [[\text{¥}]\$/\text{number of times}]) + ((\text{access number-of-time} \\ & \text{integrated value [number of times]} - \text{access number-of-time upper limit} \\ & \text{value [number of times/second]}) \times \text{single-access rate } [[\text{¥}]\$/\text{number of} \\ & \text{times}] \text{ when the integrated value is larger than the upper limit value}) + \\ & (\text{storage capacity [MByte]} \times \text{capacity unit price } [[\text{¥}]\$/\text{MByte}]) \end{aligned}$$

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This rate because a meters accounting in accordance with the number of times of access based on one access rate indicating over the upper limit value which is equal to or larger than one access rate.

(3) Under the condition that an access number-of-time upper limit value is set for the WWN 105 and there is a limit in the access to the WWN 105, because the number of times of access is limited to be not larger than the upper limit value, the rate will be calculated in a manner as follows.

$$\begin{aligned} \text{rate} = & (\text{access number-of-time upper limit value} [\text{number of times/second}] \\ & \times \text{single-access rate} [(\text{¥})\$/\text{number of times}]) + (\text{storage capacity} [\text{MByte}] \\ & \times \text{capacity unit price} [(\text{¥})\$/\text{MByte}]) \end{aligned}$$

Thus, this rate will be a fixed amount.

The claims of the invention are amended as follows:

1. (Currently amended): An accounting system comprising:
 - a plurality of host computers;
 - an accounting server in data communication with said host computers;
 - a storage control device having a plurality of channel ports for receiving data input/output operations from said host computers, said storage control device in data communication with said accounting server;
 - storage devices operative with said storage control device to store data received from said host computers and to retrieve data for transmission to said host computers;
 - accounting data generating means for generating accounting data based on at least a number of times of access or a data transfer quantity for each of one or more accounting subject control units; and
 - transfer means for informing said accounting server of said accounting data generated by said accounting data generating means,

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wherein for each said accounting subject control unit, accounting data is generated using metered accounting if an access-number-of time upper limit value for either the number of accesses per unit of time or for the quantity of data transferred per unit of time is not set, the metered accounting being based on a rate defined by:

$$\text{rate} = (\text{access number-of-time integrated value} \times \text{single-access rate}) + (\text{storage capacity} \times \text{capacity unit price}),$$

wherein for each said accounting subject control unit, if said access-number-of time upper limit value is set, then accounting data is generated using fixed accounting when said access-number-of time upper limit value has not been exceeded,

wherein for each said accounting subject control unit, if said access-number-of time upper limit value is set and an access limit for the number of accesses is not set, then accounting data is generated using metered accounting when said access-number-of time upper limit value has been exceeded, the metered accounting being based on a rate defined by:

$$\text{rate} = (\text{access number-of-time upper limit value} \times \text{single-access rate}) + ((\text{access number-of-time integrated value} - \text{access number-of-time upper limit value}) \times \text{single-access rate when the integrated value is larger than the upper limit value}) + (\text{storage capacity} \times \text{capacity unit price}),$$

wherein for each said accounting subject control unit, if said access number-of-time upper limit value is set and said access limit is set, then accounting data is generated using fixed accounting.

4. (Currently amended): An accounting system according to [[C]]claim 3, further comprising:

means for setting said access number-of-time upper limit value of said accounting data in said accounting subject control units, said means being made to operate from at least one of said accounting server or said service processor.

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5. (Currently amended): An accounting system according to [[C]]claim 4, wherein said access number-of-time upper limit value is determined on the basis of a predetermined period which includes, as a unit, at least one of a day, a week, a month, or a year.

6. (Currently amended): An accounting system according to [[C]]claim 4, wherein said storage control device includes means which operates so that when said access number-of-time upper limit value is set, said means does not process said data input/output request when said upper limit value has been exceeded.

11. (Currently amended): An accounting system according to [[C]]claim 4, wherein said storage control device has I/O control portions for setting at least said access number-of-time upper limit value[[s]] and generating accounting data in accordance with said access number-of-time upper limit value[[s]], and a shared memory for storing said accounting data.

12. (Currently amended): An accounting method for making accounting for operation of a plurality of host computers in a storage-related accounting system which comprises said plurality of host computers, an accounting server, a storage control device connected at least to said plurality of host computers and to said accounting server for performing data input/output operation through channel ports, and a storage device for storing data processed by said storage control device, said accounting method comprising steps of:

- (a) designating accounting subject control units;
- (b) for at least some of said accounting subject control units, determining an access number-of time upper limit value for a number of times of access per unit of time and for an access number-of-time upper limit value for a data transfer quantity per unit of time, wherein access and data transfer occur for each of said accounting subject control units;
- (c) generating accounting data of said accounting subject control units in accordance with said access number-of-time upper limit values; and
- (d) recording said accounting data,

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wherein for each said accounting subject control unit, accounting data is generated using metered accounting if [[an]] said access number-of-time upper limit value for either the number of accesses per unit of time or for the quantity of data transferred per unit of time is not set, the metered accounting being based on a rate defined by:

$$\text{rate} = (\text{access number-of-time integrated value} \times \text{one access rate}) + (\text{storage capacity} \times \text{capacity unit price}),$$

wherein for each said accounting subject control unit, if said access-number-of time upper limit value is set, then accounting data is generated using fixed accounting when said access number-of time upper limit value has not been exceeded,

wherein for each said accounting subject control unit, if said access-number-of time upper limit value is set and an access limit for the number of accesses is not set, then accounting data is generated using metered accounting when that access-number-of time upper limit value has been exceeded, the metered accounting being based on a rate defined by:

$$\text{rate} = (\text{access number-of-time upper limit value} \times \text{single-access rate}) + ((\text{access number-of-time integrated value} - \text{access number-of-time upper limit value}) \times \text{single-access rate when the integrated value is larger than the upper limit value}) + (\text{storage capacity} \times \text{capacity unit price}),$$

wherein for each said accounting subject control unit, if said access number-of-time upper limit value is set and said access limit is set, then accounting data is generated using fixed accounting.

15. (Currently amended): An accounting method according to [[C]]claim 12, wherein, in said step (b), said accounting server make an upper limit value[[s]] setting request to said storage control device, and in response to said request, said storage control device determines said access number-of-time upper limit values for said number of time of access and said data transfer quantities.

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16. (Currently amended): An accounting method according to ~~[[C]]~~claim 12, wherein said generation of said accounting data stated in said step (c) is made by said storage control device in accordance with said access number-of-time upper limit values

18. (Currently amended): The ~~method of~~ accounting system according to claim 1 wherein said access number-of-time upper limit value is for the number of accesses per unit of time or for the quantity of data transferred per unit of time of every connected server.

19. (Currently amended): The ~~method of~~ accounting system according to claim 1 wherein said access number-of-time upper limit value is for the number of accesses per unit of time or for the quantity of data transferred per unit of time of every connected world wide name.

20. (Currently amended): The ~~method of~~ accounting system according to claim 1 wherein said access number-of-time upper limit value is for the number of accesses per unit of time or for the quantity of data transferred per unit of time of every connected channel port.

21. (Currently amended): The ~~method of~~ accounting system according to claim 1 wherein said access number-of-time upper limit value is for the number of accesses per unit of time or for the quantity of data transferred per unit of time of every connected storage device.

22. (Currently amended): The ~~method of~~ accounting system according to claim 1 wherein said access number-of-time upper limit value is for the number of accesses per unit of time or for the quantity of data transferred per unit of time of every connected in-storage-device area.

23. (Currently amended): The method of claim 12 wherein said access number-of-time upper limit value is for the number of accesses per unit of time or for the quantity of data transferred per unit of time of every connected server.

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24. (Currently amended): The method of claim 12 wherein said access number-of-time upper limit value is for the number of accesses per unit of time or for the quantity of data transferred per unit of time of every connected world wide name.

25. (Currently amended): The method of claim 12 wherein said access number-of-time upper limit value is for the number of accesses per unit of time or for the quantity of data transferred per unit of time of every connected channel port.

26. (Currently amended): The method of claim 12 wherein said access number-of-time upper limit value is for the number of accesses per unit of time or for the quantity of data transferred per unit of time of every connected storage device.

27. (Currently amended): The method of claim 12 wherein said access number-of-time upper limit value is for the number of accesses per unit of time or for the quantity of data transferred per unit of time of every connected in-storage-device area.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Oanh Duong whose telephone number is (571) 272-3983. The examiner can normally be reached on Monday- Friday, 2:00PM - 10:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on (571) 272-4006. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 25, 2005

A handwritten signature in black ink, appearing to read 'Saleh Najjar', is positioned above the printed name and title.

SALEH NAJJAR
SUPERVISORY PATENT EXAMINER